Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An apparatus for processing AAL2 supporting multiple virtual channels comprising:

a transmitting part which assigns a corresponding virtual path/channel information of a destination to data from a plurality of AAL2 users, which multiplexes the data having the assigned virtual path/channel information into transmission ATM cells based upon the corresponding assigned virtual path/channel information, and which transmits to the corresponding destination a transmission ATM cell through one of a plurality of channels corresponding to the assigned virtual path/channel information; and

a receiving part which receives an ATM cell through one of the plurality of channels, demultiplexes the received ATM cell based upon a corresponding virtual path/channel information assigned to the ATM cell, and transmits the demultiplexed data to corresponding AAL2 users,

wherein the transmitting part comprises an AAL2 transmitter which ~~multiplies~~ multiplexes the data from the plurality of AAL2 users to generate a CPS-PDU (common part sub layer-protocol data unit), and assigns a routing information to the generated CPS-PDU;

and

wherein the routing information includes a field indicating whether a CPS-packet length is 53 bytes or 64 bytes.

2. (Previously Presented) The apparatus of claim 1, wherein the transmitting part comprises:

a first buffer unit which stores and outputs each of the data from ~~a~~ the plurality of AAL2 users as AAL2 user data;

a first memory unit which stores and controls virtual path/channel information and channel identifier information according to the routing information in each AAL2 user data;

a mini-cell constructing part which assigns a channel identifier information from the first memory unit to AAL2 user data and generates mini-cells;

an ATM cell constructing part which multiplexes each mini-cell generated by the mini-cell constructing part into a payload of a transmission ATM cell corresponding to a virtual path/channel information of each respective mini-cell and generates transmission ATM cells corresponding to different virtual path/channel information, wherein said virtual path/channel information is output by the first memory unit;

a second memory unit which stores incomplete transmission ATM cells corresponding to different virtual path/channel information from the ATM cell constructing part; and

a transmission output buffer unit which stores and outputs each full transmission ATM cell generated by the ATM cell constructing part through a corresponding channel;

wherein the ATM cell constructing part multiplexes a mini-cell generated by the mini-cell constructing part into a payload of an incomplete transmission ATM cell from the second memory if an incomplete transmission ATM cell corresponding to a virtual path/channel information of the mini-cell is stored in the second memory.

3. (Previously Presented) The apparatus of claim 2, further comprising a timer which sets a predetermined period for each transmission ATM cell corresponding to different virtual path/channel information before the ATM cell constructing part begins multiplexing mini-cells into each transmission ATM cells; and wherein the transmission output buffer unit stores and outputs an incomplete transmission ATM cell from the second memory if the predetermined period of an incomplete transmission ATM cell has elapsed.

4. (Previously Presented) The apparatus of claim 2, wherein the first buffer unit comprises:

a transmission input buffer unit which stores the AAL2 user data; and

a transmission input buffer controller which reads and outputs the AAL2 user data from the transmission input buffer.

5. (Previously Presented) The apparatus of claim 2, wherein the first memory unit comprises:

a third memory which stores the virtual path/channel information and channel identifier information according to the routing information in each AAL2 user data; and

a transmission table controller which controls and outputs information from the third memory.

6. (Previously Presented) The apparatus of claim 2, wherein the second memory comprises:

a third memory which stores incomplete transmission ATM cells;

a fourth memory which stores a table storing address information of each transmission ATM cells stored in the third memory; and

a virtual path/channel table controller which controls input and output of each incomplete transmission ATM cell to and from the third memory according to an address information of each transmission.

7. (Previously Presented) The apparatus of claim 1, wherein the receiving part comprises:

a first buffer unit which stores each reception ATM cell from the plurality of channels;

a first memory which stores routing information according to a virtual path/channel information and channel identifier information of each respective reception ATM cell;

a mini-cell deconstructing part which demultiplexes mini-cells from a payload of each reception ATM cell;

a second memory unit which stores incomplete mini-cells from the mini-cell deconstructing part;

a user data constructing part which assigns a routing information from the first memory to each complete mini-cell according to a channel identifier information and the virtual path/channel information of each complete mini-cell; and

a reception output buffer unit which stores and transmits each complete mini-cell from the user data constructing part to corresponding AAL2 users;

wherein the mini-cell deconstructing part demultiplexes a mini-cell from a payload of at least one reception ATM cell and from a corresponding incomplete mini-cell stored in the second memory unit if a mini-cell is inserted into payloads of more than one reception ATM cell.

8. (Previously Presented) The apparatus of claim 7, wherein the first buffer unit comprises:

a reception input buffer which stores each reception ATM cell from the plurality of channels; and

a reception input buffer controller which reads and outputs each reception ATM cell from the reception input buffer.

9. (Previously Presented) The apparatus of claim 7, wherein the second memory comprises:

a third memory which stores each incomplete mini-cell;

a fourth memory which stores addresses of each incomplete mini-cell stored in the third memory; and

a mini-cell table controller which controls input and output of each incomplete mini-cell to and from the third memory according to an address information of each mini-cell stored in the fourth memory.

10. (Previously Presented) The apparatus of claim 1, wherein the transmitting part comprises:

a first memory which stores CID information assigned to each data from the plurality of AAL2 users;

a second memory which stores the routing information for identifying one of the plurality virtual channels set to a destination of a CPS-PDU; and

a transmission buffer which stores the CPS-PDU from the AAL2 transmitter in one of a first multiple virtual channels identified by the assigned routing information to form and to transmit a transmission ATM cell through the channel identified by the assigned routing information; and wherein the receiving part comprises:

a reception buffer which stores a CPS-PDU from each reception ATM cell received through one of the plurality of channels, the CPS-PDU being stored in a corresponding one of a second multiple virtual channels through which each reception ATM cell is received;

an AAL2 receiver which demultiplexes CPS-PDU from the second buffer

based upon a routing information to generate and transmit the demultiplexed data to corresponding AAL2 users based upon a CID information;

a third memory which stores CID information; and

a fourth memory which stores routing information.

11. (Previously Presented) The apparatus of claim 10, wherein the AAL2 transmitter comprises:

an input buffer controller which receives a CPS-packets from the plurality of AAL2 users;

an AAL2 transmission functioning part which converts the CPS-packets from the input buffer controller into a CPS-PDU; and

an output buffer controller which controls the transmission buffer to transmit the CPS-PDU from the AAL2 transmission functioning part through one of the first multiple virtual channels.

12. (Previously Presented) The apparatus of claim 10, wherein the AAL2 receiver comprises:

an input buffer controller which receives a CPS-PDU through one of the second multiple virtual channels;

an AAL2 receiver functioning part which converts the CPS-PDU from the input buffer controller to CPS-packets; and

an output buffer controller which transfers the CPS-packets from the AAL2 receiver functioning part to corresponding AAL2 users.

13. (Currently Amended) A method for processing AAL2 supporting multiple virtual channels comprising:

(a1) assigning a corresponding virtual path/channel information of a destination to data from a plurality of AAL2 users, and multiplexing the data having the assigned virtual path/channel information into transmission ATM cells based upon the corresponding assigned virtual path/channel information, and transmitting to the corresponding destination a transmission ATM cell through one of a plurality of channels corresponding to the assigned virtual path/channel information; and

(b1) receiving an ATM cell through one of the plurality of channels, demultiplexing the received ATM cell based upon a corresponding virtual path/channel information assigned to the ATM cell, and transmitting the demultiplexed data to corresponding AAL2 users,

wherein (a1) further comprises multiplexing the data from the plurality of AAL2 users to generate a CPS-PDU (common part sub layer-protocol data unit), and

assigning a routing information to the generated CPS-PDU; and

wherein the routing information includes information indicating whether a CPS-packet length is 53 bytes or 64 bytes.

14. (Previously Presented) The method of claim 13, wherein (a1) further comprises:

(a2) storing and outputting each of the data from a plurality of AAL2 users as AAL2 user data;

(b2) storing and controlling virtual path/channel information and channel identifier information according to the routing information in each AAL2 user data;

(c2) assigning a channel identifier information from the first memory unit to a user data of the AAL2 data and generating mini-cells;

(d2) multiplexing each generated mini-cell into a payload of a transmission ATM cell corresponding to a virtual path/channel information of each respective mini-cell and generating transmission ATM cells corresponding to different virtual path/channel information;

(e2) storing incomplete transmission ATM cells corresponding to different virtual path/channel information from (d2); and

(f2) storing and outputting each full transmission ATM cells generated in (d2) through a corresponding channel;

wherein in (d2) multiplexing a generated mini-cell into a payload of an incomplete transmission ATM cell from (e2) if an incomplete transmission ATM cell corresponding to a virtual path/channel information of the mini-cell is stored.

15. (Previously Presented) The method of claim 14, further comprising:

setting a predetermined period for each transmission ATM cell corresponding to different virtual path/channel information before multiplexing mini-cells into each transmission ATM cells in (d2); and in (f2) storing and outputting an incomplete transmission ATM cell from (e2) if the predetermined period of an incomplete transmission ATM cell has elapsed.

16. (Previously Presented) The method of claim 13, wherein (b1) further comprises:

(a2) storing each reception ATM cell from the plurality of channels;

(b2) storing routing information according to a virtual path/channel information and channel identifier information of each respective reception ATM cell;

(c2) demultiplexing mini-cells from a payload of each reception ATM cell;

(d2) storing incomplete mini-cells from (c2);

(e2) assigning a routing information from (b2) to each complete mini-cell according to a channel identifier information and the virtual path/channel information of each complete mini-cell; and

(f2) storing and transmitting each complete mini-cell from the user data constructing part to corresponding AAL2 users;

wherein in (c2), demultiplexing a mini-cell from a payload of at least one reception ATM cell and from a corresponding stored incomplete mini-cell if a mini-cell is inserted into payloads of more than one reception ATM cell.

17. (Previously Presented) The method of claim 13, wherein (a1) further comprises:

storing CID information assigned to each data from the plurality of AAL2 users;

storing the routing information for identifying one of the plurality virtual channels set to a destination of a CPS-PDU; and

storing the CPS-PDU in one of a first multiple virtual channels identified by the assigned routing information to form and to transmit a transmission ATM cell through the channel identified by the assigned routing information; and wherein (b1) comprises:

storing a CPS-PDU from each reception ATM cell received through one of the plurality of channels, the CPS-PDU being stored in a corresponding one of a second multiple virtual channels through which each reception ATM cell is received;

demultiplexing a CPS-PDU from the second buffer based upon a routing information to generate and transmit the demultiplexed data to corresponding AAL2 users based upon a CID information; and

storing CID information and routing information.

18. (Previously Presented) A method for processing AAL2 supporting multiple virtual channels comprising:

(a) multiplexing packet data transmitted from at least one AAL2 user to generate protocol data;

(b) assigning virtual channel identification information (R_Tag), corresponding to a destination, to the protocol data, and grouping together protocol data having a same virtual channel identification information before transmitting the data to the destination; and

(c) transmitting the protocol data through a corresponding virtual channel according to the assigned virtual channel identification information (R_Tag),

wherein a predetermined byte having identification information for identifying the virtual channels is additionally assigned to the protocol data, and the identification

information indicates whether a CPS-packet length is 53 bytes or a length different than 53 bytes.

19. (Previously Presented) The method of claim 18, wherein (a) further comprises:

assigning a header to the packet data, said header including CID information, LI information, UUI information, and HEC information; and

assigning the virtual channel identification information and a start field to the packet data to which the header is assigned, said start field including OSF information, a sequence number of the protocol data, and a parity bit for correcting error.

20. (Canceled)

21. (Previously Presented) The method of claim 18, wherein the predetermined byte is one-byte.

22. (Previously Presented) The method of claim 18, wherein (c) further comprises transmitting the protocol data through one of a plurality of buffers which are set corresponding to virtual channels.

23. (Previously Presented) The method of claim 18, further comprising:

(d) receiving the protocol data by an ATM layer through the virtual channel;

(e) demultiplexing the received protocol data to generate packet data, and dividing the packet data by users or virtual channels; and

(f) transmitting the packet data to an AAL2 user according to a corresponding destination.

24. (Canceled)

25. (Previously Presented) The method of claim 23, wherein (e) further comprises:

storing the received protocol data in a plurality of reception buffers which are set corresponding to the virtual channels; and

demultiplexing the protocol data, stored in the plural reception buffers, using the identification information for identifying the virtual channels.

26. (Currently Amended) An apparatus for processing multiple virtual channels comprising:

a transmitting part which assigns a corresponding virtual path/channel information of a destination to data from a plurality of AAL2 users, which multiplexes the

data having the assigned virtual path/channel information into transmission ATM cells based upon the corresponding assigned virtual path/channel information, and which transmits to the corresponding destination a transmission ATM cell through one of a plurality of channels corresponding to the assigned virtual path/channel information,

wherein the transmitting part comprises an AAL2 transmitter which ~~multiplies~~ multiplexes the data from the plurality of AAL2 users to generate a (common part sub layer-protocol data unit) CPS-PDU, and assigns a routing information to the generated CPS-PDU; and

wherein the routing information includes a field indicating whether a CPS-packet length is 53 bytes or a length different than 53 bytes.

27. (Previously Presented) The apparatus of claim 26, wherein the transmitting part comprises:

a first buffer unit which stores and outputs each of the data from the plurality of AAL2 users as AAL2 user data;

a first memory unit which stores and controls virtual path/channel information and channel identifier information according to the routing information in each AAL2 user data;

a mini-cell constructing part which assigns a channel identifier information from the first memory unit to AAL2 user data and generates mini-cells;

an ATM cell constructing part which multiplexes each mini-cell generated by the mini-cell constructing part into a payload of a transmission ATM cell corresponding to a virtual path/channel information of each respective mini-cell and generates transmission ATM cells corresponding to different virtual path/channel information, wherein said virtual path/channel information is output by the first memory unit;

a second memory unit which stores incomplete transmission ATM cells corresponding to different virtual path/channel information from the ATM cell constructing part; and

a transmission output buffer unit which stores and outputs each full transmission ATM cell generated by the ATM cell constructing part through a corresponding channel;

wherein the ATM cell constructing part multiplexes a mini-cell generated by the mini-cell constructing part into a payload of an incomplete transmission ATM cell from the second memory if an incomplete transmission ATM cell corresponding to a virtual path/channel information of the mini-cell is stored in the second memory.

28. (Currently Amended) An apparatus for processing multiple virtual channels comprising:

a receiving part which receives an ATM cell through one of a plurality of channels, demultiplexes the received ATM cell based upon a corresponding virtual path/channel information assigned to the ATM cell, and transmits the demultiplexed data to corresponding AAL2 users,

wherein the receiving part reads a field of the ATM cell to determined whether a (common part sub layer) CPS-packet length is 53 bytes or 64 bytes, and

wherein the receiving part comprises:

a first buffer unit which stores each reception ATM cell from the plurality of channels;

a first memory which stores routing information according to a virtual path/channel information and channel identifier information of each respective reception ATM cell;

a mini-cell deconstructing part which demultiplexes mini-cells from a payload of each reception ATM cell;

a second memory unit which stores incomplete mini-cells from the mini-cell deconstructing part;

a user data constructing part which assigns a routing information from

the first memory to each complete mini-cell according to a channel identifier information and the virtual path/channel information of each complete mini-cell; and

a reception output buffer unit which stores and transmits each complete mini-cell from the user data constructing part to corresponding AAL2 users;

wherein the mini-cell deconstructing part demultiplexes a mini-cell from a payload of at least one reception ATM cell and from a corresponding incomplete mini-cell stored in the second memory unit if a mini-cell is inserted into payloads of more than one reception ATM cell.

29. (Canceled)